

Amendments to the Claims:

This listing of claims replaces all prior versions and listings of claims in the application:

Listing of Claims:

1. (Currently Amended) A method of determining structural integrity of a bone within the spine of a patient using a neurophysiology system, the bone having a first aspect and a second aspect, said second aspect separated from said first aspect by a width and located adjacent to a spinal nerve, said method comprising:

applying an electrical stimulus to said first aspect of said bone;

electrically monitoring a plurality of leg muscle myotome locations via a plurality of electromyographic (EMG) sensor electrodes coupled to the leg muscle myotome locations, at least one of the leg muscle myotome locations being associated with said spinal nerve;

~~automatically~~ determining an onset neuro-muscular response to the application of said electrical stimulus to said first aspect of said bone by automatically increasing said electrical stimulus in constant increments until said onset neuro-muscular response is detected by one or more of the EMG sensor electrodes outputting an EMG signal having an amplitude value greater than a predetermined value, wherein said automatic increasing is controlled by said neurophysiology system; and

~~communicating to~~ displaying on a display device of said neurophysiology system that is viewable by a surgeon operating on the patient's spine an onset electrical stimulus current level which causes said onset neuro-muscular response.

2. (Original) The method of claim 1, wherein the electrical stimulus is emitted from an electrode disposed on the distal end of at least one of a probe and surgical tool.

3. (Currently Amended) The method of claim 1, wherein automatically increasing said electrical stimulus in constant increments ~~applying an electrical stimulus~~ comprises applying a plurality of electrical stimulus pulses.

4. (Currently Amended) The method of claim 3, wherein the plurality of electrical stimulus pulses comprises current pulses that automatically increase in constant increments over time until said onset neuromuscular response is determined.
5. (Currently Amended) The method of claim ~~[[3]]~~1, wherein the ~~plurality of~~ electrical stimulus ~~pulses comprises~~ is increased by constant current increments from within the range of 0.5 to 4 milliamps ~~pulses that automatically vary incrementally until said onset neuromuscular response is determined..~~
6. (Currently Amended) The method of claim ~~[[3]]~~1, wherein the ~~plurality of~~ electrical stimulus ~~pulses comprises current pulses varied incrementally~~ is increased within a current range from 0.5 to 32.0 milliamps.
7. (Canceled).
8. (Currently Amended) The method of claim 1, wherein said spinal nerve exits from successive vertebrae within ~~one of the cervical, thoracic, and lumbar region~~ of the patient's spine.
9. (Original) The method of claim 1, wherein said onset neuro-muscular response is an electromyography response from a muscle coupled to said spinal nerve.
10. (Currently Amended) The method of claim 1, wherein electrically monitoring said plurality of leg muscle myotome locations is performed through the use of needle electrodes ~~an electrode~~ electrically coupled to ~~said leg muscle myotomes~~.
11. (Canceled).
12. (Canceled).
13. (Canceled).
14. (Currently Amended) The method of claim 1, wherein ~~communicating to said surgeon~~ displaying the onset electrical stimulus current level on the display device includes visually displaying to said surgeon an electrical current value ~~intensity level~~ representing said onset

electrical stimulus current level causing said onset neuro-muscular response for said spinal nerve.

15. (Previously Presented) The method of claim 14, wherein visually displaying comprises illuminating lights.

16. (Currently Amended) The method of claim 14, wherein visually displaying comprises displaying different illuminating lights of varying colors on the display device when the electrical current value is below a predetermined level.

17. (Currently Amended) The method of claim 16, wherein each color corresponds to a predetermined warning to the surgeon-user.

18. (Currently Amended) The method of claim 1 and further, comprising audibly indicating to said surgeon an intensity level representing said onset electrical stimulus current level causing said onset neuro-muscular response for said spinal nerve.

19. (Original) The method of claim 18, wherein audibly indicating comprises sounding an alarm if said onset neuro-muscular response is detected at a predetermined intensity level.

20. (Currently Amended) The method of claim 18, further comprising varying the volume of said alarm according to variations in said intensity level of said onset electrical stimulus current level causing said onset neuro-muscular response.

21. (Currently Amended) The method of claim 20, wherein said volume of said alarm decreases as said intensity level of said onset electrical stimulus current level causing said neuro-muscular response increases.

22. (Currently Amended) The method of claim 21, further comprising varying the frequency of said alarm according to said intensity level of said onset electrical stimulus current level causing said onset neuro-muscular response.

23. (Currently Amended) The method of claim 22, wherein said frequency of said alarm decreases as said intensity level of said onset electrical stimulus current level causing said onset neuromuscular response increases.

24. (Original) The method of claim 1, wherein said first aspect of said bone comprises a region within a pedicle in contact with a pedicle screw.
25. (Original) The method of claim 1, wherein applying an electrical stimulus to said first aspect of said bone comprises applying said electrical stimulus to a proximal end of a bone screw inserted into said first aspect of said bone.
26. (Previously Presented) The method of claim 14, wherein visually displaying involves the use of at least one of multi-color LEDs and an integrated display.
27. (New) The method of claim 1, wherein said amplitude value greater than the predetermined value comprises a peak-to-peak amplitude value greater than the predetermined value.
28. (New) The method of claim 1, wherein said predetermined value is a voltage value selected from a range of about 60mV to about 80mV.